

HAYNES et al
Appl. No. 10/563,920
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AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1-24 (cancelled).

25 (currently amended). ~~A catalyst-system process~~ for the production of acetic acid by reacting with carbon monoxide methanol and/or a reactive derivative thereof in a liquid reaction composition comprising methyl acetate, a finite concentration of water, acetic acid and a catalyst system, which catalyst system comprises an iridium carbonylation catalyst, methyl iodide co-catalyst, optionally at least one of ruthenium, osmium, rhenium, zinc, gallium, tungsten, cadmium, mercury and indium and at least one non-hydrohalogenoic acid promoter.

26 (currently amended). ~~A catalyst-system process~~ according to claim 25 wherein the non-hydrohalogenoic acid is selected from an oxoacid, a superacid, a heteropolyacid and mixtures thereof.

27 (currently amended). ~~A catalyst-system process~~ according to claim 26 wherein the non-hydrohalogenoic acid is an oxoacid.

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28 (currently amended). A ~~catalyst system~~ process according to claim 27 wherein the oxoacid is an oxoacid of the elements of Groups 13 to 17 of the Periodic Table.

29 (currently amended). A ~~catalyst system~~ process according to claim 27 wherein the oxoacid is selected from H_2SO_4 , HNO_3 , H_3PO_4 and mixtures thereof.

30 (currently amended). A ~~catalyst system~~ process according to claim 27 wherein the molar ratio of oxoacid anion to iridium is in the range [greater than 0 to 0.4] : 1.

31 (currently amended). A ~~catalyst system~~ process according to claim 29 wherein the molar ratio of oxoacid anion to iridium is [greater than 0 to 0.35] : 1, ~~such as in the range [0.05 to 0.3] : 1.~~

32 (currently amended). A ~~catalyst system~~ process according to claim 28 wherein the non-hydrohalogenoic acid is a superacid.

33 (currently amended). A ~~catalyst system~~ process according to claim 32 wherein the superacid has a non-coordinating anion to iridium.

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34 (currently amended). A ~~catalyst system~~ process according to claim 32 wherein the superacid is a superacid having an anion selected from BF_4^- , PF_6^- , $(\text{CF}_3\text{SO}_2)_2\text{N}^-$, $\text{CBH}_6\text{Br}_6^-$, CF_3SO_3^- , SbF_6^- , FSO_3^- and mixtures thereof.

35 (currently amended). A ~~catalyst system~~ process according to claim 32 wherein the superacid is selected from HBF_4 , HPF_6 , $(\text{CF}_3\text{SO}_2)_2\text{NH}$, HCBH_6Br_6 and mixtures thereof.

36 (currently amended). A ~~catalyst system~~ process according to claim 32 wherein the molar ratio of the superacid anion to iridium is in the range [greater than 0 to 2.5] : 1.

37 (currently amended). A ~~catalyst system~~ process according to claim 36 wherein the molar ratio of the superacid anion to iridium is in the range [greater than 0 to 1] : 1, ~~such as in the range [0.05 to 0.5] : 1.~~

38 (currently amended). A ~~catalyst system~~ process according to claim 26 wherein the non-hydrohalogenoic acid is a heteropolyacid.

39 (currently amended). A ~~catalyst system~~ process according to claim 38 wherein the heteropolyacid comprises molybdenum and/or tungsten as peripheral atoms.

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40 (currently amended). A ~~catalyst system~~ process according to claim 39 wherein the heteropolyacid is selected from 12-tungstophosphoric acid, 12-molybdophosphoric acid, 12-tungstosilicic acid, 12-molybdosilicic acid and mixtures thereof.

41 (currently amended). A ~~catalyst system~~ process according to claim 38 wherein the molar ratio of the heteropolyacid anion to iridium is in the range [greater than 0 to 5] : 1.

42 (currently amended). A ~~catalyst system~~ process according to claim 41 wherein the molar ratio of the heteropolyacid anion to iridium is in the range [greater than 1 to 4] : 1, ~~such as in the range [1.5 to 3.5] : 1.~~

43 (currently amended). A ~~catalyst system~~ process according to claim 25 ~~which~~ wherein the catalyst comprises at least one of ruthenium, osmium, rhenium, zinc, gallium, tungsten, cadmium, mercury and indium.

44 (currently amended). A ~~catalyst system~~ process according to claim 43 ~~which~~ wherein the catalyst comprises at least one of ruthenium, osmium, rhenium and indium.

45 (canceled).

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46 (currently amended). A process according to claim 45 25 wherein the concentration of methyl acetate in the liquid reaction composition is in the range 1 to 70% by weight.

47 (currently amended). A process according to claim 46 wherein the methyl acetate concentration is in the range 2 to 50% by weight, ~~such as 3 to 35% by weight.~~

48 (currently amended). A process according to claim 45 25 wherein the concentration of water in the liquid reaction composition is in the range 1 to 15% by weight.

49 (currently amended). A process according to claim 48 wherein the concentration of water is in the range 1 to 10% by weight, ~~such as 1 to 6.5% by weight.~~

50 (currently amended). A process according to claim 45 25 wherein the process is carried out as a continuous process.